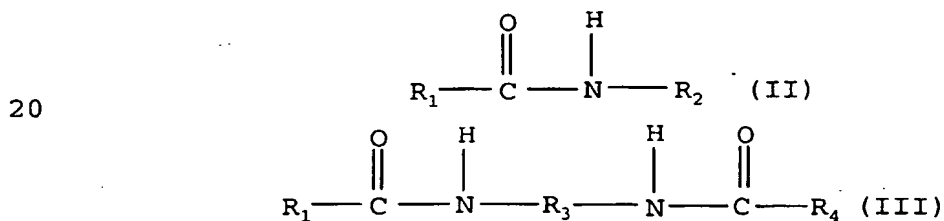


CLAIMS

1. Tyre for vehicle wheels, comprising at least one structural element including a crosslinked elastomeric material obtained by crosslinking an elastomeric composition comprising:
- 5 (a) at least one diene elastomeric polymer;
- (b) at least one reinforcing filler;
- (c) from 0.05 phr to 10 phr of zinc oxide;
- 10 (d) from 0.1 phr to 20 phr of at least one fatty acid amide;
- (e) from 0.1 phr to 15 phr of at least one zinc salt of a carboxylic acid of formula  $R-COOH$ , wherein R is selected from linear or branched  $C_1-C_{24}$  alkyl groups, linear or branched  $C_2-C_{24}$  alkenyl groups,
- 15  $C_5-C_{24}$  cycloalkyl groups,  $C_6-C_{24}$  aryl groups,  $C_7-C_{24}$  alkylaryl or arylalkyl groups.
2. Tyre according to claim 1, comprising:
- a carcass structure with at least one carcass ply shaped in a substantially toroidal configuration, the opposite lateral edges of which are associated with respective right-hand and left-hand bead wires, each bead wire being enclosed in a respective bead;
- 20 - a belt structure comprising at least one belt strip applied in a circumferentially external position relative to said carcass structure;
- a tread band superimposed circumferentially on said belt structure;
- 25 - a pair of side walls applied laterally on opposite sides relative to said carcass structure;
- 30 in which said structural element which includes said elastomeric composition is the tread band.
3. Tyre according to claim 1 or 2, in which the zinc oxide (c) is added to the elastomeric composition in an amount of from 0.1 phr to 6.0 phr.
- 35

4. Tyre according to claim 3, in which the zinc oxide (c) is added to the elastomeric composition in an amount of from 0.5 phr to 5.0 phr.
5. Tyre according to claim 1 or 2, in which the fatty acid amide (d) is added to the elastomeric composition in an amount of from 0.5 phr to 10 phr.
6. Tyre according to claim 5, in which the fatty acid amide (d) is added to the elastomeric composition in an amount of from 2.0 phr to 6.0 phr.
7. Tyre according to claim 1 or 2, in which the zinc salt of a carboxylic acid (e) is added to the elastomeric composition in an amount of from 0.5 phr to 10 phr.
8. Tyre according to claim 7, in which the zinc salt of a carboxylic acid (e) is added to the elastomeric composition in an amount of from 1.0 phr to 5.0 phr.
9. Tyre according to any one of the preceding claims, in which the diene elastomeric polymer (a) has a glass transition temperature ( $T_g$ ) below 20°C.
10. Tyre according to claim 9, in which the diene elastomeric polymer (a) is selected from: cis-1,4-polyisoprene, 3,4-polyisoprene, polybutadiene, optionally halogenated isoprene/isobutene copolymers, 1,3-butadiene/acrylonitrile copolymers, styrene/1,3-butadiene copolymers, styrene/isoprene/1,3-butadiene copolymers, styrene/1,3-butadiene/acrylonitrile copolymers, or mixtures thereof.
11. Tyre according to any one of the preceding claims, in which the elastomeric composition comprises at least one elastomeric polymer of one or more monoolefins with an olefinic comonomer or derivatives thereof (a').
12. Tyre according to claim 10, in which the elastomeric polymer (a') is selected from: ethylene/propylene copolymers (EPR) or ethylene/propylene/diene copolymers (EPDM); polyisobutene; butyl rubbers; halobutyl rubbers; or mixtures thereof.

13. Tyre according to any one of the preceding claims, in which the reinforcing filler (b) is selected from carbon black, silica, alumina, aluminosilicates, calcium carbonate, kaolin, or mixtures thereof.
- 5 14. Tyre according to claim 13, in which the reinforcing filler (b) is carbon black.
15. Tyre according to claim 13, in which the reinforcing filler (b) is silica.
- 10 16. Tyre according to any one of the preceding claims, in which the reinforcing filler (b) is added to the elastomeric composition in an amount of from 0.1 phr to 120 phr.
17. Tyre according to claim 16, in which the reinforcing filler (b) is added to the elastomeric composition in an amount of from 20 phr to 90 phr.
- 15 18. Tyre according to any one of the preceding claims, in which the fatty acid amide (d) is selected from compounds having the following formulae (II) or (III):



wherein:

- $\text{R}_1$  and  $\text{R}_4$ , which may be identical or different from each other, are selected from linear or branched  $\text{C}_1$ - $\text{C}_{24}$  alkyl groups, linear or branched  $\text{C}_2$ - $\text{C}_{24}$  alkenyl groups,  $\text{C}_5$ - $\text{C}_{24}$  cycloalkyl groups;
  - $\text{R}_3$  is a linear or branched  $\text{C}_1$ - $\text{C}_{10}$  alkylene group;
  - $\text{R}_2$  is hydrogen; or is selected from linear or branched  $\text{C}_1$ - $\text{C}_{24}$  alkyl groups, linear or branched  $\text{C}_2$ - $\text{C}_{24}$  alkenyl groups,  $\text{C}_5$ - $\text{C}_{24}$  cycloalkyl groups.
19. Tyre according to claim 18, in which the fatty acid amide (d) is selected from: acetamide, propionamide, n-butyramide, n-valeramide, n-caproamide, stearamide,

- lauroylamide, miristic amide, arachidamide, behenamide, ethylene-bis-stearamide, ethylene-bis-oleamide, or mixtures thereof.
- 5 20. Tyre according to claim 19, in which the fatty acid amide (d) is stearamide.
- 10 21. Tyre according to any one of the preceding claims, in which the carboxylic acids of formula  $R-COOH$  are selected from:  $C_8-C_{10}$  coconout acid, stearic acid, lauric acid, oleic acid, octanoic acid, myristic acid, palmitic acid, palmitoleic acid, linoleic acid, benzoic acid, chlorobenzoic acid, methylbenzoic acid, naphthyl acid.
- 15 22. Tyre tread band including a crosslinkable elastomeric composition comprising:
- (a) at least one diene elastomeric polymer;
- (b) at least one reinforcing filler;
- (c) from 0.05 phr to 10 phr of zinc oxide;
- (d) from 0.1 phr to 20 phr of at least one fatty acid amide;
- 20 (e) from 0.1 phr to 15 phr of at least one zinc salt of a carboxylic acid of formula  $R-COOH$ , wherein R is selected from linear or branched  $C_1-C_{24}$  alkyl groups, linear or branched  $C_2-C_{24}$  alkenyl groups,  $C_5-C_{24}$  cycloalkyl groups,  $C_6-C_{24}$  aryl groups,  $C_7-C_{24}$  alkylaryl or arylalkyl groups.
- 25 23. Tyre tread band according to claim 22, in which the zinc oxide (c) is added to the elastomeric composition in an amount of from 0.1 phr to 6.0 phr.
- 30 24. Tyre according to claim 23, in which the zinc oxide (c) is added to the elastomeric composition in an amount of from 0.5 phr to 5.0 phr.
25. Tyre tread band according to claim 22, in which the fatty acid amide (d) is added to the elastomeric composition in an amount of from 0.5 phr to 10 phr.
- 35 26. Tyre tread band according to claim 25, in which the fatty acid amide (d) is added to the elastomeric composition in an amount of from 2.0 phr to 6.0 phr.

27. Tyre tread band according to claim 22, in which the zinc salt of a carboxylic acid (e) is added to the elastomeric composition in an amount of from 0.5 phr to 10 phr.
- 5 28. Tyre tread band according to claim 27, in which the zinc salt of a carboxylic acid (e) is added to the elastomeric composition in an amount of from 1.0 phr to 5.0 phr.
- 10 29. Tyre tread band according to any one of claims from 22 to 28, in which the diene elastomeric polymer is defined according to any one of claims from 10 to 12.
30. Tyre tread band according to any one of claims from 22 to 29, in which the reinforcing filler (b) is defined according to any one of claims from 13 to 17.
- 15 31. Tyre tread band according to any one of claims from 22 to 30, in which the fatty acid amide (d) is defined according to any one of claims from 18 to 20.
- 20 32. Tyre tread band according to any one of claims from 22 to 31, in which the carboxylic acids of formula R-COOH are defined according to claim 21.
- 25 33. Elastomeric composition comprising:  
(a) at least one diene elastomeric polymer;  
(b) at least one reinforcing filler;  
(c) from 0.05 phr to 10 phr of zinc oxide;  
(d) from 0.1 phr to 20 phr of at least one fatty acid amide;  
(e) from 0.1 phr to 15 phr of at least one zinc salt of a carboxylic acid of formula R-COOH, wherein R is selected from linear or branched C<sub>1</sub>-C<sub>24</sub> alkyl groups, linear or branched C<sub>2</sub>-C<sub>24</sub> alkenyl groups, C<sub>5</sub>-C<sub>24</sub> cycloalkyl groups, C<sub>6</sub>-C<sub>24</sub> aryl groups, C<sub>7</sub>-C<sub>24</sub> alkylaryl or arylalkyl groups.
- 30 34. Elastomeric composition according to claim 33, in which the zinc oxide (c) is added in an amount of
- 35 from 0.1 phr to 6.0 phr.

35. Elastomeric composition according to claim 34, in which the zinc oxide (c) is added in an amount of from 0.5 phr to 5.0 phr.
- 5 36. Elastomeric composition according to claim 34, in which the fatty acid amide (d) is added in an amount of from 0.5 phr to 10 phr.
37. Elastomeric composition according to claim 36, in which the fatty acid amide (d) is added in an amount of from 2.0 phr to 6.0 phr.
- 10 38. Elastomeric composition according to claim 34, in which the zinc salt of a carboxylic acid (e) is added in an amount of from 0.5 phr to 10 phr.
39. Elastomeric composition according to claim 38, in which the zinc salt of a carboxylic acid (e) is added in an amount of from 1.0 phr to 5.0 phr.
- 15 40. Elastomeric composition according to any one of claims from 33 to 39, in which the diene elastomeric polymer is defined according to any one of claims from 10 to 12.
- 20 41. Elastomeric composition according to any one of claims from 33 to 40, in which the reinforcing filler (b) is defined according to any one of claims from 13 to 17.
- 25 42. Elastomeric composition according to any one of claims from 33 to 41, in which the fatty acid amide (d) is defined according to any one of claims from 18 to 20.
43. Elastomeric composition according to any one of claims from 33 to 42, in which the carboxylic acids of formula R-COOH are defined according to claim 21.
- 30 44. Crosslinked elastomeric manufactured product obtained by crosslinking an elastomeric composition defined according to any one of Claims 33 to 43.